



60261499.txt
SEQUENCE LISTING

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<120> BACTERIAL PHEROMONES AND USES THEREFOR

<130> 49946-60261

<140> 09/445,289

<141> 2000-05-11

<150> PCT/GB98/01619

<151> 1998-06-03

<150> GB 9711389.8

<151> 1997-06-04

<150> GB 9811221.2

<151> 1998-05-27

<160> 63

<170> PatentIn Ver. 3.3

<210> 1

<211> 362

<212> PRT

<213> Mycobacterium tuberculosis

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Gly Thr Ala Met Arg Val Thr Thr Met Lys Ser Arg Val Ile Asp Ile
35 40 45

Val Glu Glu Asn Gly Phe Ser Val Asp Asp Arg Asp Asp Leu Tyr Pro
50 55 60

Ala Ala Gly Val Gln Val His Asp Ala Asp Thr Ile Val Leu Arg Arg
65 70 75 80

Ser Arg Pro Leu Gln Ile Ser Leu Asp Gly His Asp Ala Lys Gln Val
85 90 95

Trp Thr Thr Ala Ser Thr Val Asp Glu Ala Leu Ala Gln Leu Ala Met
100 105 110

Thr Asp Thr Ala Pro Ala Ala Ala Ser Arg Ala Ser Arg Val Pro Leu
115 120 125

Ser Gly Met Ala Leu Pro Val Val Ser Ala Lys Thr Val Gln Leu Asn
130 135 140

Asp Gly Gly Leu Val Arg Thr Val His Leu Pro Ala Pro Asn Val Ala
145 150 155 160

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Gly Leu Leu Ser Ala Ala Gly Val Pro Leu Leu Gln Ser Asp His Val
165 170 175
Val Pro Ala Ala Thr Ala Pro Ile Val Glu Gly Met Gln Ile Gln Val
180 185 190
Thr Arg Asn Arg Ile Lys Lys Val Thr Glu Arg Leu Pro Leu Pro Pro
195 200 205
Asn Ala Arg Arg Val Glu Asp Pro Glu Met Asn Met Ser Arg Glu Val
210 215 220
Val Glu Asp Pro Gly Val Pro Gly Thr Gln Asp Val Thr Phe Ala Val
225 230 235 240
Ala Glu Val Asn Gly Val Glu Thr Gly Arg Leu Pro Val Ala Asn Val
245 250 255
Val Val Thr Pro Ala His Glu Ala Val Val Arg Val Gly Thr Lys Pro
260 265 270
Gly Thr Glu Val Pro Pro Val Ile Asp Gly Ser Ile Trp Asp Ala Ile
275 280 285
Ala Gly Cys Glu Ala Gly Gly Asn Trp Ala Ile Asn Thr Gly Asn Gly
290 295 300
Tyr Tyr Gly Gly Val Gln Phe Asp Gln Gly Thr Trp Glu Ala Asn Gly
305 310 315 320
Gly Leu Arg Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg Glu Glu Gln
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<213> Mycobacterium tuberculosis

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Leu Val Thr Thr Ser Pro Ala Gly Ile Ala Asn Ala Asp Asp Ala Gly
35 40 45
Leu Asp Pro Asn Ala Ala Ala Gly Pro Asp Ala Val Gly Phe Asp Pro
50 55 60
Asn Leu Pro Pro Ala Pro Asp Ala Ala Pro Val Asp Thr Pro Pro Ala
65 70 75 80
Pro Glu Asp Ala Gly Phe Asp Pro Asn Leu Pro Pro Pro Leu Ala Pro
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85

90

95

Asp Phe Leu Ser Pro Pro Ala Glu Glu Ala Pro Pro Val Pro Val Ala
 100 105 110
 Tyr Ser Val Asn Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly Asn
 115 125
 Trp Ser Ile Asn Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Arg Phe Thr
 130 135 140
 Ala Gly Thr Trp Arg Ala Asn Gly Gly Ser Gly Ser Ala Ala Asn Ala
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<211> 174

<212> PRT

<213> Mycobacterium leprae

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 20 25 30
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 35 40 45
 Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr Leu
 50 55 60
 Gly Gly Leu Gln Phe Ser Gln Gly Thr Trp Ala Ser His Gly Gly Gly
 65 70 75 80
 Glu Tyr Ala Pro Ser Ala Gln Leu Ala Thr Arg Glu Gln Gln Ile Ala
 85 90 95
 Val Ala Glu Arg Val Leu Ala Thr Gln Gly Ser Gly Ala Trp Pro Ala
 100 105 110
 Cys Gly His Gly Leu Ser Gly Pro Ser Leu Gln Glu Val Leu Pro Ala
 115 120 125
 Gly Met Gly Ala Pro Trp Ile Asn Gly Ala Pro Ala Pro Leu Ala Pro
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<213> Mycobacterium tuberculosis

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          35          40          45
Arg Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr
          50          55          60
Leu Gly Gly Leu Gln Phe Thr Gln Ser Thr Trp Ala Ala His Gly Gly
          65          70          75          80
Gly Glu Phe Ala Pro Ser Ala Gln Leu Ala Ser Arg Glu Gln Gln Ile
          85          90          95
Ala Val Gly Glu Arg Val Leu Ala Thr Gln Gly Arg Gly Ala Trp Pro
          100          105          110
Val Cys Gly Arg Gly Leu Ser Asn Ala Thr Pro Arg Glu Val Leu Pro
          115          120          125
Ala Ser Ala Ala Met Asp Ala Pro Leu Asp Ala Ala Ala Val Asn Gly
          130          135          140
Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val
          145          150          155          160
Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
          165          170          175
Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala
          180          185          190
Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro
          195          200          205
Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro
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Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala
          225          230          235          240
Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val
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Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
          260          265          270
Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser
          275          280          285
Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro
          290          295          300
Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala
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Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly
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 Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro
 340 345 350
 Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala
 355 360 365
 Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln
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 <212> PRT
 <213> Mycobacterium leprae

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 35 40 45
 Ala Val Ala Gln Cys Glu Ser Gly Arg Asn Trp Arg Ala Asn Thr Gly
 50 55 60
 Asn Gly Phe Tyr Gly Gly Leu Gln Phe Lys Pro Thr Ile Trp Ala Arg
 65 70 75 80
 Tyr Gly Gly Val Gly Asn Pro Ala Gly Ala Ser Arg Glu Gln Gln Ile
 85 90 95
 Thr Val Ala Asn Arg Val Leu Ala Asp Gln Gly Leu Asp Ala Trp Pro
 100 105 110
 Lys Cys Gly Ala Ala Ser Asp Leu Pro Ile Thr Leu Trp Ser His Pro
 115 120 125
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 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 6

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 Asp Met Ser Ser Met Thr Arg Ile Ala Lys Pro Leu Ile Lys Ser Ala
 35 40 45
 Met Ala Ala Gly Leu Val Thr Ala Ser Met Ser Leu Ser Thr Ala Val
 50 55 60
 Ala His Ala Gly Pro Ser Pro Asn Trp Asp Ala Val Ala Gln Cys Glu
 65 70 75 80
 Ser Gly Gly Asn Trp Ala Ala Asn Thr Gly Asn Gly Lys Tyr Gly Gly
 85 90 95
 Leu Gln Phe Lys Pro Ala Thr Trp Ala Ala Phe Gly Gly Val Gly Asn
 100 105 110
 Pro Ala Ala Ala Ser Arg Glu Gln Gln Ile Ala Val Ala Asn Arg Val
 115 120 125
 Leu Ala Glu Gln Gly Leu Asp Ala Trp Pro Thr Cys Gly Ala Ala Ser
 130 135 140
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 35 40 45
 Ala Asp Asp Ile Asp Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly
 50 55 60
 Asn Trp Ala Ala Asn Thr Gly Asn Gly Leu Tyr Gly Gly Leu Gln Ile
 65 70 75 80
 Ser Gln Ala Thr Trp Asp Ser Asn Gly Gly Val Gly Ser Pro Ala Ala
 85 90 95
 Ala Ser Pro Gln Gln Gln Ile Glu Val Ala Asp Asn Ile Met Lys Thr
 100 105 110

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Gln Gly Pro Gly Ala Trp Pro Lys Cys Ser Ser Cys Ser Gln Gly Asp
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 <213> Streptomyces coelicolor

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 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
 35 40 45
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
 50 55 60
 Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
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 85 90 95
 Ser Ala Trp

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 <212> PRT
 <213> Bacillus subtilis

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 35 40 45
 Ala Cys Leu Leu Leu Ala Gly Ser Gly Thr Ala Tyr Ala Ala His Glu
 50 55 60
 Leu Thr Lys Gln Ser Val Ser Val Ser Ile Asn Gly Lys Lys Lys His
 65 70 75 80
 Ile Arg Thr His Ala Asn Thr Val Gly Asp Leu Leu Glu Thr Leu Asp
 85 90 95

Ile Lys Thr Arg Asp Glu Asp Lys Ile Thr Pro Ala Lys Gln Thr Lys
 100 105 110
 Ile Thr Ala Asp Met Asp Val Val Tyr Glu Ala Ala Lys Pro Val Lys
 115 120 125
 Leu Thr Ile Asn Gly Glu Glu Lys Thr Leu Trp Ser Thr Ala Lys Thr
 130 135 140
 Val Gly Ala Leu Leu Asp Glu Gln Asp Val Asp Val Lys Glu Gln Asp
 145 150 155 160
 Gln Ile Asp Pro Ala Ile Asp Thr Asp Ile Ser Lys Asp Met Lys Ile
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 Asn Ile Glu Pro Ala Phe Gln Val Thr Val Asn Asp Ala Gly Lys Gln
 180 185 190
 Lys Lys Ile Trp Thr Thr Ser Thr Thr Val Ala Asp Phe Leu Lys Gln
 195 200 205
 Gln Lys Met Asn Ile Lys Asp Glu Asp Lys Ile Lys Pro Ala Leu Asp
 210 215 220
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 225 230 235 240
 Lys Val Thr Asp Val Val Glu Glu Lys Ile Ala Phe Asp Val Lys Lys
 245 250 255
 Gln Glu Asp Ala Ser Leu Glu Lys Gly Lys Glu Lys Val Val Gln Lys
 260 265 270
 Gly Lys Glu Gly Lys Leu Lys Lys His Phe Glu Val Val Lys Glu Asn
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 Gly Lys Glu Val Ser Arg Glu Leu Val Lys Glu Glu Thr Ala Glu Gln
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 Ser Lys Asp Lys Val Ile Ala Val Gly Thr Lys Gln Ser Ser Pro Lys
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 325 330 335
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 370 375 380
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 385 390 395 400
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<213> Bacillus subtilis

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35 40 45

Asp Leu Lys Glu Trp Asn Lys Leu Thr Ser Asp Lys Ile Ile Ala Gly
50 55 60

Glu Lys Leu Thr Ile Ser Ser Glu Glu Thr Thr Thr Thr Gly Gln Tyr
65 70 75 80

Thr Ile Lys Ala Gly Asp Thr Leu Ser Lys Ile Ala Gln Lys Phe Gly
85 90 95

Thr Thr Val Asn Asn Leu Lys Val Trp Asn Asn Leu Ser Ser Asp Met
100 105 110

Ile Tyr Ala Gly Ser Thr Leu Ser Val Lys Gly Gln Ala Thr Ala Ala
115 120 125

Asn Thr Ala Thr Glu Asn Ala Gln Thr Asn Ala Pro Gln Ala Ala Pro
130 135 140

Lys Gln Glu Ala Val Gln Lys Glu Gln Pro Lys Gln Glu Ala Val Gln
145 150 155 160

Gln Gln Pro Lys Gln Glu Thr Lys Ala Glu Ala Glu Thr Ser Val Asn
165 170 175

Thr Glu Glu Lys Ala Val Gln Ser Asn Thr Asn Asn Gln Glu Ala Ser
180 185 190

Lys Glu Leu Thr Val Thr Ala Thr Ala Tyr Thr Ala Asn Asp Gly Gly
195 200 205

Ile Ser Gly Val Thr Ala Thr Gly Ile Asp Leu Asn Lys Asn Pro Asn
210 215 220

Ala Lys Val Ile Ala Val Asp Pro Asn Val Ile Pro Leu Gly Ser Lys
225 230 235 240

Val Tyr Val Glu Gly Tyr Gly Glu Ala Thr Thr Ala Ala Asp Thr Gly
245 250 255

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 <213> Clostridium acetobutylicum

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 <223> Variable amino acid

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 35 40 45
 Asn Asn Ile Leu Val Gly Pro Lys Asp Lys Ile Gln Pro Ala Leu Asp
 50 55 60
 Thr Asn Leu Lys Asn Gly Asp Lys Ile Tyr Ile Lys Lys Ala Ile Ser
 65 70 75 80
 Val Glu Val Ala Val Asp Gly Lys Val Arg Arg Val Lys Ser Ser Glu
 85 90 95
 Glu Thr Val Ser Lys Met Leu Lys Ala Glu Lys Ile Pro Leu Ser Lys
 100 105 110
 Val Asp Lys Val Asn Ile Ser Arg Asn Ala Ala Ile Lys Lys Asn Met
 115 120 125
 Lys Ile Ser Ile Thr Arg Val Asn Ser Gln Ile Thr Lys Glu Asn Gln
 130 135 140
 Gln Val Asp Phe Pro Thr Glu Val Ile Ser Asp Asp Ser Met Gly Asn
 145 150 155 160
 Asp Glu Lys Gln Val Ile Gln Gln Gly Gln Ala Gly Glu Lys Glu Val
 165 170 175
 Phe Thr Lys Ile Val Tyr Glu Asp Gly Lys Ala Val Ser Lys Glu Ile
 180 185 190
 Val Gly Glu Val Ile Lys Lys Glu Pro Thr Lys Gln Val Phe Lys Val
 195 200 205
 Gly Thr Leu Gly Val Leu Lys Pro Asp Arg Gly Gly Arg Val Leu Tyr
 210 215 220
 Lys Lys Ser Leu Gln Val Leu Ala Thr Ala Tyr Thr Asp Asp Phe Ser
 225 230 235 240
 Phe Gly Ile Thr Ala Ser Gly Thr Lys Val Lys Arg Asp Ser Asp Gly
 245 250 255

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Tyr Ser Ser Ile Ala Val Asp Pro Thr Val Ile Pro Leu Gly Thr Lys
 260 265 270
 Leu Tyr Val Pro Gly Tyr Gly Tyr Gly Val Val Ala Glu Asp Thr Gly
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 Gly Ala Ile Lys Gly Asn Arg Leu Asp Leu Phe Phe Thr Ser Glu Arg
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 <213> Clostridium perfringens

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 35 40 45
 Gly Gly Ala Ile Lys Gly Asn Arg Val Asp Leu Phe Phe Asn Thr Glu
 50 55 60
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 Asn

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 <212> PRT
 <213> Unknown Organism

<220>
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 C-terminal domain peptide

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 35 40 45
 Pro Gln Ala
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 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

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 35 40 45

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 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

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 Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro
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<210> 16
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 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

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<211> 43

<212> PRT

<213> Unknown Organism

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<212> PRT

<213> Unknown Organism

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<223> Description of Unknown Organism: Hypothetical
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<211> 45

<212> PRT

<213> Unknown Organism

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<210> 20

<211> 46

<212> PRT

<213> Unknown Organism

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<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

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35 40 45

<210> 21

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

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<212> PRT

<213> Unknown Organism

<220>

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<212> PRT

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wall-associated protein fragment

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 Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln
 50 55 60

<210> 24

<211> 167

<212> PRT

<213> Mycobacterium tuberculosis

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 Ala Pro Pro Ala Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val
 35 40 45
 Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala
 50 55 60
 Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
 65 70 75 80
 Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
 85 90 95
 Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly
 100 105 110
 Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu
 115 120 125
 Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
 130 135 140
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 Pro Pro Ala Ala Val Asn Glu
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<212> PRT

<213> Mycobacterium tuberculosis

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<213> Mycobacterium tuberculosis

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<212> PRT

<213> Mycobacterium tuberculosis

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1 5 10 15

<210> 28

<211> 15

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<213> Mycobacterium tuberculosis

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<212> PRT

<213> Mycobacterium tuberculosis

<400> 29

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<210> 30

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<212> PRT

<213> Mycobacterium tuberculosis

<400> 30

Ala Pro Pro Ala Pro Ala Asp Leu
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<210> 31

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<213> Mycobacterium tuberculosis

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Ala Pro Pro Ala Pro Ala Asp Val

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5

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<400> 33
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<210> 34
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 <212> PRT
 <213> Listeria monocytogenes

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 Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr
 35 40 45
 Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val
 50 55 60
 Pro Gly Gln Lys Leu Gln Val Asn Asn Glu Val Ala Ala Ala Glu Lys
 65 70 75 80
 Thr Glu Lys Ser Val Ser Ala Thr Trp Leu Asn Val Arg Thr Gly Ala
 85 90 95
 Gly Val Asp Asn Ser Ile Ile Thr Ser Ile Lys Gly Gly Thr Lys Val
 100 105 110
 Thr Val Glu Thr Thr Glu Ser Asn Gly Trp His Lys Ile Thr Tyr Asn
 115 120 125
 Asp Gly Lys Thr Gly Phe Val Asn Gly Lys Tyr Leu Thr Asp Lys Ala
 130 135 140
 Val Ser Thr Pro Val Ala Pro Thr Gln Glu Val Lys Lys Glu Thr Thr
 145 150 155 160
 Thr Gln Gln Ala Ala Pro Val Ala Glu Thr Lys Thr Glu Val Lys Gln
 165 170 175
 Thr Thr Gln Ala Thr Thr Pro Ala Pro Lys Val Ala Glu Thr Lys Glu
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180										185										190										
Thr	Pro	Val	Ile	Asp	Gln	Asn	Ala	Thr	Thr	His	Ala	Val	Lys	Ser	Gly															
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Asp	Thr	Ile	Trp	Ala	Leu	Ser	Val	Lys	Tyr	Gly	Val	Ser	Val	Gln	Asp															
	210					215					220																			
Ile	Met	Ser	Trp	Asn	Asn	Leu	Ser	Ser	Ser	Ser	Ile	Tyr	Val	Gly	Gln															
225					230					235					240															
Lys	Leu	Ala	Ile	Lys	Gln	Thr	Ala	Asn	Thr	Ala	Thr	Pro	Lys	Ala	Glu															
				245					250					255																
Val	Lys	Thr	Glu	Ala	Pro	Ala	Ala	Glu	Lys	Gln	Ala	Ala	Pro	Val	Val															
			260					265					270																	
Lys	Glu	Asn	Thr	Asn	Thr	Asn	Thr	Ala	Thr	Thr	Glu	Lys	Lys	Glu	Thr															
		275					280					285																		
Ala	Thr	Gln	Gln	Gln	Thr	Ala	Pro	Lys	Ala	Pro	Thr	Glu	Ala	Ala	Lys															
	290					295					300																			
Pro	Ala	Pro	Ala	Pro	Ser	Thr	Asn	Thr	Asn	Ala	Asn	Lys	Thr	Asn	Thr															
305					310					315					320															
Asn	Thr	Asn	Thr	Asn	Asn	Thr	Asn	Thr	Pro	Ser	Lys	Asn	Thr	Asn	Thr															
				325					330					335																
Asn	Ser	Asn	Thr	Asn	Thr	Asn	Thr	Asn	Ser	Asn	Thr	Asn	Ala	Asn	Gln															
			340					345					350																	
Gly	Ser	Ser	Asn	Asn	Asn	Ser	Asn	Ser	Ser	Ala	Ser	Ala	Ile	Ile	Ala															
		355					360					365																		
Glu	Ala	Gln	Lys	His	Leu	Gly	Lys	Ala	Tyr	Ser	Trp	Gly	Gly	Asn	Gly															
	370					375					380																			
Pro	Thr	Thr	Phe	Asp	Cys	Ser	Gly	Tyr	Thr	Lys	Tyr	Val	Phe	Ala	Lys															
385					390					395					400															
Ala	Gly	Ile	Ser	Leu	Pro	Arg	Thr	Ser	Gly	Ala	Gln	Tyr	Ala	Ser	Thr															
				405					410					415																
Thr	Arg	Ile	Ser	Glu	Ser	Gln	Ala	Lys	Pro	Gly	Asp	Leu	Val	Phe	Phe															
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Asp	Tyr	Gly	Ser	Gly	Ile	Ser	His	Val	Gly	Ile	Tyr	Val	Gly	Asn	Gly															
		435					440					445																		
Gln	Met	Ile	Asn	Ala	Gln	Asp	Asn	Gly	Val	Lys	Tyr	Asp	Asn	Ile	His															
	450					455					460																			
Gly	Ser	Gly	Trp	Gly	Lys	Tyr	Leu	Val	Gly	Phe	Gly	Arg	Val																	
465					470					475																				

<210> 35

<211> 758

<212> DNA

<213> Micrococcus luteus

<220>

<221> CDS

<222> (66)..(728)

<400> 35

accaaggaga aggacgaccc cggtgtgcct cggccgccga tcagcgagga ctcgccatgg 60

acacc atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc 110
 Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr 15

gcc tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc 158
 Ala Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly 30

ttc tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc 206
 Phe Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu 45

gcc gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc 254
 Ala Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly 60

ttc tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc 302
 Phe Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly 75

ggc gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc 350
 Gly Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg 95

gcc gag atc ctc cag gac ctg cag gcc tgg ggc gcg tgg ccg ctg tgc 398
 Ala Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys 110

tcg cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg 446
 Ser Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val 125

gac gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg 494
 Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val 140

cag cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc 542
 Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala 155

gcg gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc 590
 Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser 175

ggt gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc 638
 Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly 190

tgg acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc 686
 Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala 205

gtg atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga 728
 Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala 220

gacgcctgac cggccccccg gaccggtacc 758

<210> 36
 <211> 220
 <212> PRT
 <213> Micrococcus luteus

<400> 36
 Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
 1 5 10 15
 Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
 20 25 30
 Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
 35 40 45
 Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
 50 55 60
 Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
 65 70 75 80
 Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
 85 90 95
 Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
 100 105 110
 Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp
 115 120 125
 Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln
 130 135 140
 Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala
 145 150 155 160
 Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly
 165 170 175
 Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp
 180 185 190
 Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val
 195 200 205
 Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
 210 215 220

<210> 37
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 37

gcsacsgtsg acacstggga ccgsctsgcs gag

33

<210> 38
 <211> 19
 <212> PRT
 <213> Micrococcus luteus

<220>
 <221> MOD_RES
 <222> (13)
 <223> Variable amino acid

<220>
 <221> MOD_RES
 <222> (18)
 <223> Variable amino acid

<400> 38
 Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Glu Xaa Ser Asn Gly
 1 5 10 15

Thr Xaa Asp

<210> 39
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 39
 ccgccgtaga agccgttg

18

<210> 40
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 40
 agttcacctt gtcctcctg

19

<210> 41
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>
 <221> modified_base

<222> (9)
<223> i

<220>
<221> modified_base
<222> (15)
<223> i

<220>
<221> modified_base
<222> (21)
<223> i

<400> 41
gcytgrtgng grtanccytc ncc

23

<210> 42
<211> 12
<212> PRT
<213> Micrococcus luteus

<400> 42
Val Gly Gly Glu Gly Tyr Pro His Gln Ala Ser Lys
1 5 10

<210> 43
<211> 182
<212> PRT
<213> Micrococcus luteus

<400> 43
Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Cys Glu Ser Asn Gly
1 5 10 15
Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe Tyr Gly Gly Val Gln Phe
20 25 30
Thr Leu Ser Ser Trp Gln Ala Val Gly Gly Glu Gly Tyr Pro His Gln
35 40 45
Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala Glu Ile Leu Gln Asp Leu
50 55 60
Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser Gln Lys Leu Gly Leu Thr
65 70 75 80
Gln Ala Asp Ala Asp Ala Gly Asp Val Asp Ala Thr Glu Ala Ala Pro
85 90 95
Val Ala Val Glu Arg Thr Ala Thr Val Gln Arg Gln Ser Ala Ala Asp
100 105 110
Glu Ala Ala Ala Glu Gln Ala Ala Ala Glu Gln Ala Val Val Ala
115 120 125
Glu Ala Glu Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu
130 135 140
Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala
145 150 155 160

Asn Lys Gly Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu
 165 170 175

Leu Val Leu Pro Gln Ala
 180

<210> 44
 <211> 299
 <212> DNA
 <213> Streptomyces coelicolor

<220>
 <221> CDS
 <222> (3)..(299)

<400> 44
 gg atc cgc acc gcc gcg gta acc ctg gtc gcc gcg acc gca ctc ggg 47
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly
 1 5 10 15
 gcg acc ggc gaa gcg gtg gcc gcg ccc tcg gcg ccc ctg cgc acc gac 95
 Ala Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp
 20 25 30
 tgg gac gcc atc gcc gcg tgc gag tcc agc ggc aac tgg cag gcg aac 143
 Trp Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn
 35 40 45
 acc ggc aac ggc tac tac ggc ggc ctg cag ttc gca cgg tcc agc tgg 191
 Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp
 50 55 60
 atc gcc gcc ggc ggc ctc aag tac gcc ccg cgc gcg gac ctc gcc acc 239
 Ile Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr
 65 70 75
 cgc ggc gag cag atc gcc gtg gcg gaa cgc ctc gcc cgt ctg cag ggg 287
 Arg Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly
 80 85 90 95
 atg tcc gcc tgg 299
 Met Ser Ala Trp

<210> 45
 <211> 99
 <212> PRT
 <213> Streptomyces coelicolor

<400> 45
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
 1 5 10 15
 Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp
 20 25 30
 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
 35 40 45
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
 50 55 60

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Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
65 70 75 80

Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met
85 90 95

Ser Ala Trp

<210> 46
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 46
gtcagaattc atatggccac cgtggacacc tggg 34

<210> 47
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 47
tgacggatcc tattaggcct gcggcaggac gag 33

<210> 48
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 48
atcagaattc atatggacga catcgattgg gacgc 35

<210> 49
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 49
cgcaggatcc cctcaatcgt ccctgctcc 29

<210> 50
<211> 23
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 50

gaagagaatt ccttccatca cga

23

<210> 51

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 51

ccaaacgaat tcggtcaatc ac

22

<210> 52

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 52

gcaaggatcc cagactaaaa aaacag

26

<210> 53

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 53

atcaggatcc atattattag tttaaga

27

<210> 54

<211> 663

<212> DNA

<213> Micrococcus luteus

<220>

<221> CDS

<222> (1)..(663)

<400> 54

atg	act	ctc	ttc	acc	act	tcc	gcc	acc	cgc	tcc	cgc	cgt	gcc	acc	gcc	48
Met	Thr	Leu	Phe	Thr	Thr	Ser	Ala	Thr	Arg	Ser	Arg	Arg	Ala	Thr	Ala	
1				5					10				15			

tcg	atc	gtc	gcg	ggc	atg	acc	ctc	gcc	ggc	gcc	gcc	gcc	gtg	ggc	ttc	96
Ser	Ile	Val	Ala	Gly	Met	Thr	Leu	Ala	Gly	Ala	Ala	Ala	Val	Gly	Phe	
			20					25					30			

tcc	gcc	ccg	gcc	cag	gcc	gcc	acc	gtg	gac	acc	tgg	gac	cgc	ctc	gcc	144

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Ser	Ala	Pro	Ala	Gln	Ala	Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala		
		35					40					45					
gag	tgc	gag	tcc	aac	ggc	acc	tgg	gac	atc	aac	acc	ggc	aac	ggc	ttc	192	
Glu	Cys	Glu	Ser	Asn	Gly	Thr	Trp	Asp	Ile	Asn	Thr	Gly	Asn	Gly	Phe		
	50					55					60						
tac	ggc	ggc	gtg	cag	ttc	acc	ctg	tcc	tcc	tgg	cag	gcc	gtc	ggc	ggc	240	
Tyr	Gly	Gly	Val	Gln	Phe	Thr	Leu	Ser	Ser	Trp	Gln	Ala	Val	Gly	Gly		
	65				70					75					80		
gaa	ggc	tac	ccg	cac	cag	gcc	tcg	aag	gcc	gag	cag	atc	aag	cgc	gcc	288	
Glu	Gly	Tyr	Pro	His	Gln	Ala	Ser	Lys	Ala	Glu	Gln	Ile	Lys	Arg	Ala		
				85					90					95			
gag	atc	ctc	cag	gac	ctg	cag	ggc	tgg	ggc	gcg	tgg	ccg	ctg	tgc	tcg	336	
Glu	Ile	Leu	Gln	Asp	Leu	Gln	Gly	Trp	Gly	Ala	Trp	Pro	Leu	Cys	Ser		
			100					105					110				
cag	aag	ctg	ggc	ctg	acc	cag	gct	gac	gcg	gac	gcc	ggt	gac	gtg	gac	384	
Gln	Lys	Leu	Gly	Leu	Thr	Gln	Ala	Asp	Ala	Asp	Ala	Gly	Asp	Val	Asp		
		115					120					125					
gcc	acc	gag	gcc	gcc	ccg	gtc	gcc	gtg	gag	cgc	acg	gcc	acc	gtg	cag	432	
Ala	Thr	Glu	Ala	Ala	Pro	Val	Ala	Val	Glu	Arg	Thr	Ala	Thr	Val	Gln		
	130					135					140						
cgc	cag	tcc	gcc	gcg	gac	gag	gct	gcc	gcc	gag	cag	gcc	gct	gcc	gcg	480	
Arg	Gln	Ser	Ala	Ala	Asp	Glu	Ala	Ala	Ala	Glu	Gln	Ala	Ala	Ala	Ala		
	145				150					155					160		
gag	cag	gcc	gtc	gtc	gcc	gag	gcc	gag	acc	atc	gtc	gtc	aag	tcc	ggt	528	
Glu	Gln	Ala	Val	Val	Ala	Glu	Ala	Glu	Thr	Ile	Val	Val	Lys	Ser	Gly		
			165						170					175			
gac	tcc	ctc	tgg	acg	ctc	gcc	aac	gag	tac	gag	gtg	gag	ggt	ggc	tgg	576	
Asp	Ser	Leu	Trp	Thr	Leu	Ala	Asn	Glu	Tyr	Glu	Val	Glu	Gly	Gly	Trp		
			180					185					190				
acc	gcc	ctc	tac	gag	gcc	aac	aag	ggc	gcc	gtc	tcc	gac	gcc	gcc	gtg	624	
Thr	Ala	Leu	Tyr	Glu	Ala	Asn	Lys	Gly	Ala	Val	Ser	Asp	Ala	Ala	Val		
		195					200					205					
atc	tac	gtc	ggc	cag	gag	ctc	gtc	ctg	ccg	cag	gcc	tga				663	
Ile	Tyr	Val	Gly	Gln	Glu	Leu	Val	Leu	Pro	Gln	Ala						
	210					215					220						

<210> 55

<211> 6

<212> PRT

<213> Mycobacterium tuberculosis

<400> 55

Ala Pro Pro Ala Asp Leu

1

5

<210> 56

<211> 7

<212> PRT

<213> Mycobacterium tuberculosis

<400> 56

Ala Pro Ala Ser Ala Asp Leu
1 5

<210> 57

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<400> 57

Ala Pro Pro Ala Pro Ala Glu Leu
1 5

<210> 58

<211> 4

<212> PRT

<213> Mycobacterium tuberculosis

<400> 58

Ala Pro Pro Ala
1

<210> 59

<211> 4

<212> PRT

<213> Mycobacterium tuberculosis

<400> 59

Ala Val Asn Glu
1

<210> 60

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<220>

<221> MOD_RES

<222> (14)

<223> Asp or Glu

<400> 60

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Xaa Leu
1 5 10 15

<210> 61

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<220>

<221> MOD_RES

<222> (7)

<223> Asp or Glu

<220>

<221> MOD_RES

<222> (8)

<223> Leu or Val

<400> 61

Ala Pro Pro Ala Pro Ala Xaa Xaa
1 5

<210> 62

<211> 11

<212> PRT

<213> Mycobacterium tuberculosis

<220>

<221> MOD_RES

<222> (8)

<223> Ala or Val

<400> 62

Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu
1 5 10

<210> 63

<211> 14

<212> PRT

<213> Mycobacterium tuberculosis

<400> 63

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp
1 5 10